exhibited in the Great Exhibition of 1851, amongst which were roasted coffee seeds which had been divided longitudinally by a patented machine, and the folded skin taken out; these broken seeds were sold under the name of coffee nibs. We do not see any advantage in this; but on the contrary, the broken seeds would be much more liable than whole seeds to adulteration with damaged berries, and this skin is so thin that it adds little to the weight of the coffee, and the small proportion in which it occurs does not affect either the pocket or the health of the consumer; indeed, we are told by some travellers, that neither the skin nor the parchment itself deteriorates the quality of the coffee, but rather adds to its value, for in some parts of Arabia the parchment is preferred before the seed itself.

Therefore genuine coffee, when seen under a microscope, will exhibit an appearance similar to that shown at Fig. 4, with the addition, in nearly all cases, of a few small bodies like those at Fig. 5, scattered here and there.

A very simple test for the presence of chicory in ground coffee, is to drop a little in a tumbler of clean cold water. Do not stir it, but if chicory is present the particles will immediately drop to the bottom of the tumbler, imparting at once to the water a deep amber colour; the coffee particles will float for a much longer time, and the water will be but slightly coloured. The most satisfactory way of purchasing coffee, however, is in the whole state, and to grind it as it is wanted, when all the freshness of the aroma is obtained in the infusion. For examination under the microscope, coffee should be previously soaked in water, or boiled in a weak solution of potash; this both softens the tissues and makes the substance more transparent. For persons unacquainted with vegetable structure, it will help them very much in determining the microscopical appearance of genuine roasted coffee, to examine first both the fresh coffee seed and the fresh chicory root; for this purpose a slice should be cut from each as thin as possible, moistened with water, and placed on a glass slide with an ordinary thin glass covering dropped on the top, and gently pressed down with the fingers so as to exclude all air bubbles. A half-inch objective may be used, and with an ordinary amount of perception adulterations may be detected. Other substances than chicory may be mixed with coffee, but none will present such microscopical appearances as those we have shown to belong to genuine coffee.

J. R. JACKSON

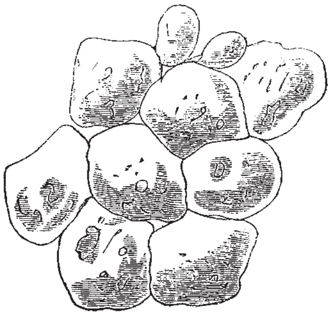

FIG. 6.—Cellular Tissue of Chicory.

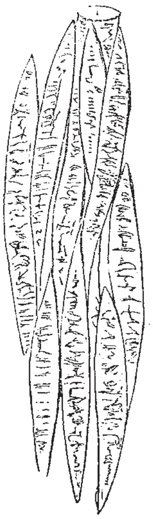

FIG. 7.—Vascular Tissue of Chicory.

NOTES

WELL-WISHERS of the University of Oxford will rejoice to hear that the honorary degree of D.C.L. has been offered to Mr. Darwin. The state of Mr. Darwin's health unfortunately precludes him from accepting the proffered honour, but the scientific naturalists of this and other countries will none the less appreciate the compliment which has been paid to their great leader. It is all the more graceful as Mr. Darwin is not an Oxford, but a Cambridge man, a circumstance which the University of Cambridge seems to have forgotten; though by-and-by it will be one of her claims not to be herself forgotten.

DR. HOOKER, F.R.S., and Professor W. H. Flower, F.R.S., have been appointed examiners in botany and anatomy for the Natural Sciences Tripos at Cambridge. The other examiners are Professor Miller, Sec. R.S., in mineralogy, Mr. Trotter, fellow of Trinity College, in chemistry and physics, Mr. Danby, fellow of Downing College, in geology.

WE are glad to announce that Mr. Geikie has arrived in England, and is in a fair way of recovery.

THE Sars subscription fund has now reached 343*l*. in England, and 11,666 francs in France. It is very desirable that intending contributors should forward their subscriptions without delay.

IT is reported that the Secretary of State for India has determined upon establishing in this country a complete College of Science for civil engineers, for the education of those who are to be employed on the extensive Government works in that country.

ALL true lovers of science will be glad to hear of the approaching visit to this country of Prof. Henry, the Secretary of the Smithsonian Institution at Washington, United States. It is well known how much our own celebrated electricians are indebted to Prof. Henry for his valuable researches in magnetism and electricity, the results arrived at being freely placed at the disposal of all whom they might interest. We understand he is daily expected.

THE celebrated photographer, M. Niépce de St. Victor, having died in very straitened circumstances, leaving a wife and two children totally unprovided for, a committee of French photographers has been formed to collect a fund for their relief. Subscriptions may be forwarded to MM. Blacque and D'Eichthal, bankers, 19, Rue de Grammont; or to the president of the French Photographic Society, 9, Rue Cadet, Paris.

IN the Rev. William Hincks's address as President of the Canadian Institute, we find the following sentence:—"If we may implicitly believe a statement in the new periodical devoted to natural science, NATURE, whilst the English are still discussing the possibility of Darwinianism being true, the Germans have so thoroughly adopted it that it has become the foundation for new systems—the starting-point for fresh inquiries. This may appear to most of us to be going somewhat too fast; but then NATURE may be presumed to be the special organ of the extreme Darwinians, and might be thought to see facts through a somewhat coloured medium." It will hardly be necessary to point out to our readers that we are the organ of no party, extreme or otherwise. Free play has been given in these pages to the expression of opinion by competent men of every section or party. In so far as "Darwinianism" implies rigid accuracy of observation and a candid consideration of all the varied phenomena of natural science, we trust we shall always be Darwinian as we hope to be Newtonian.

A. H. GARROD was elected on the 13th inst. a Foundation Scholar of St. John's College, Cambridge, for proficiency in the Natural Sciences; at the same time H. Blunt and H. N. Read were elected, for the same cause, to exhibitions of 20*l.* and 10*l.* respectively. Mr. Garrod obtained in 1868 the Natural Science exhibition of 50*l.* per annum, open to students commencing their residence.

THE committee who organised courses of lectures for women at Cambridge last year have issued the following scheme of lectures for the academical year 1870-71. They will be delivered, generally speaking, twice a week within the period of University residence:—English History, by Professor Seeley. English Literature, by W. G. Clark, M.A., and others. It is proposed to give a series of short courses on different departments of English literature. They will be delivered once a week during the October Term, certainly, and, if possible, during the whole academical year, commencing with a course on "Shakespeare and the Elizabethan Dramatists" by Mr. Clark. English Language and Literature, by W. W. Skeat, M.A.; Latin, by J. E. B. Mayor, M.A., and A. Holmes, M.A. (Elementary Lectures); Greek, by J. Peile, M.A.; German, by W. C. Green, M.A.; French, by M. Boquel; Algebra and the Principles of Arithmetic, by Professor Cayley; Practical Arithmetic, by J. F. Moulton, B.A.; Geometry and Elements of Physics treated Historically, by W. K. Clifford, B.A.; Logic, by J. Venn, M.A.; Political Economy, by A. Marshall, M.A.; Geology, by T. G. Bonney, B.D. (Botany, by Professor Babington, will be substituted for Geology in the Easter Term); Chemistry, by P. T. Main, M.A.; Harmony and Thorough Bass, by G. M. Garrett, Mus. D.; Theory of Sound in its application to Music popularly and experimentally treated, by S. Taylor, M.A. All persons wishing to attend any of these lectures in the next October Term are requested to apply to the Rev. G. F. Browne, St. Catherine's College, on or before the 1st of October. The committee announce the following Exhibitions:—One of 40*l.* per annum for two years, to be given to one of the senior candidates in the Cambridge Local Examinations, January, 1871, according to the report of the examiners. Attendance at two courses of lectures in every Term will be required as a condition of receiving the Exhibition in each year. Given by Mr. Mill and Miss Taylor. One of 20*l.* for one year together with free admission to three courses of lectures in each Term; and one of 10*l.* for one year. Given by Mrs. Adams. These two will be given by two of the candidates in the Cambridge Examination for Women, July, 1870, according to the report of the examiners. Attendance at two courses of lectures during each of two Terms at least will be required as a condition of receiving either of these Exhibitions.

THE following elections to scholarships have been made at Gonville and Caius College, Cambridge: G. Warington, 50*l.*, for chemistry; G. J. Romanes, 20*l.*, for anatomy and physiology. We hope that this College, which has been peculiarly prolific in eminent medical men, will soon follow the example of some of its neighbours in offering open scholarships for Natural Science.

DR. ALBERT WALSH was elected, at a meeting of the Royal College of Surgeons of Ireland, held on the 13th inst., as president of the college for this year, and Dr. Wharton was elected vice-president. The only alteration in the council was the election of Dr. Butcher, by a small majority, in place of Dr. Mapother.

THE examination for the vacant fellowship in Trinity College, Dublin, commenced on the 30th May, and concluded on the 11th inst. The following numbers represent the highest possible answering in each of the three courses. Mathematics, 1,250 (pure 1,000, experimental science 250), classics 750 (classics 650, Hebrew and cognate languages 100), mental and moral science 500. The election took place on Trinity Monday, when George Cathcart was elected fellow and the Madden Prize was given to W. S. Burnside.

THE *Academy*, referring to Mr. Lockyer's recent observations that the various vapour-currents in the solar envelope, which has been called the chromosphere, and defined as possibly the outer layer of the sun's atmosphere, were so rapid and violent that the position of the hydrogen lines in the spectrum was altered, and that by noting the amount of alteration, the actual velocity of these "solar storms," as Mr. Lockyer has termed them, could be determined without difficulty; states that Father Secchi, of Rome, who a long time ago denied the accuracy of these observations, and the validity of these conclusions, has quite recently returned to the charge. Father Secchi asserts that the alterations observed in the wave-length are really due to the *sun's rotation*, and then he proves by calculation that the velocity of the sun's surface at the equator is 429 kilometres per second. He next calculates what alteration this motion should make in the position of the hydrogen lines in the spectrum; and last of all he points his spectroscope to the sun and sees exactly such alterations as his calculations require. Now this at first appears a final answer to Mr. Lockyer, but Volpicelli and Fizeau have pointed out that Father Secchi's calculation in fact shows him to be ignorant of Mr. Lockyer's reasoning, and that his 429 kilometres per second should really read two kilometres.

THE *Gardener's Chronicle* congratulates us on finding that our friends across the Channel have as characteristic a Circumlocution Office as ourselves. Here is what the French papers say on the matter:—A provincial druggist, desirous of gathering Fox-glove (*Digitalis*) in one of the State forests, applied for permission to the local authority (*garde général local*), offering at the same time to pay an annual sum of six francs for the privilege. The local magnate transmitted the request to his inspector, who forwarded it to the Conservator of the department, who despatched it to Paris to the Director-General of Forests, who caused it to be sent to the Minister of Finance. The Minister referred it "for study" to the Director-General of Domains, who sent it to the Departmental Director of Domains to be examined by the Registrar. The latter, after examination, pronounced a favourable opinion on the request, and sent it back to the Departmental Director, who forwarded it to the General Director, who, in his turn, despatched it to the Minister, through the agency of the General Secretary of Finance, who availed himself of the opportunity to make his comments on the matter. Then the unhappy druggist's request was returned to the Director-General of Forests, who sent it to the Conservator, he to the inspector, and the inspector to the *garde général*, who was the original recipient of the request. The authority "to cull simples," at length reached the successor of the original postulant, and at an age when he was too old to herborise. We hope this style of management will not be engrafted on to our Indian forest department, already well provided in this way.

THE lecture next Sunday evening at St. George's Hall, Langham Place, under the auspices of the Sunday Lecture Society, will be delivered by Mr. D. Forbes, F.R.S. The subject is "Volcanoes."

M. CLAUDE BERNARD commenced yesterday in the amphitheatre of the geological gallery his course of lectures on general physiology at the Museum of Natural History, Paris. He will treat of the general principles of physiology, especially from the point of view of its relation to the other sciences.

DR. MAXWELL T. MASTERS is engaged in editing a new edition of "Henfrey's Elementary Course of Botany," condensed, and in many parts re-written, which will be published in a few days.

DR. R. VIRCHOW has contributed to a recent number of the *Zeitschrift für Ethnologie* an interesting article on "Portrait or

Facial Urns" (*Gesichts-urnen*), which has been printed separately. Funereal urns, containing bones and ashes, have long been known, in museums, from Egypt and Etruria, the lids of which, generally of stone, were fashioned into the shape of a human head, or that of some other animal. The human heads, if not portraits, are supposed to have at least indicated the condition of the deceased. In the course of the last forty years facial urns have been discovered in mounds in various parts of Germany, mostly near the Roman settlements on the Rhine, but more recently in the neighbourhood of the watering-place Zoppot in Pomerania, but confined to a very circumscribed district, and exhibiting, according to Dr. Virchow, points of marked difference from those found in Rhenish Prussia. Many of these have well-developed human faces, others have rough drawings of animals, sometimes difficult to make out, scratched upon them. Similar urns are described as having been found in Mexico and Peru; but Dr. Virchow believes that the peculiar contour and form of ornamentation of these North German urns indicate an Etrurian origin, and possibly point to a colonising of the Baltic from Italy.

AT the last meeting of the Scientific Committee of the Horticultural Society, the Rev. M. J. Berkeley exhibited some specimens of the female form of *Lychnis diurna*, in which the flowers were infested with smut, and the stamens, usually abortive, were developed. Mr. Berkeley believes that "the *Ustilago* penetrates the plant, but as it can only fructify in the stamens, it would appear to be the determining cause of the production of those organs in the normally female flower." It is laid down as a rule in Mr. Darwin's works that no change can take place in a species through the agency of Natural Selection unless the change is for the benefit of the species. It is difficult to see how the abnormal production of stamens for the purpose of finding a home for the smut can benefit the *Lychnis;* and it would be interesting to know whether vegetable physiologists generally will sanction the idea of such a power in the plant to develope organs which assist in its own destruction.

WE have received a letter from Mr. Walenn pointing out that in our report of the meeting of the Chemical Society on May 19, we have omitted to mention that the calico-printing roller which was exhibited was immersed for some days in a bath containing sulphuric acid and cupric sulphate, then coated with brass in an alkaline liquid, and finally coated with copper in an acid bath. A deposit, $\frac{3}{16}$ of an inch thick, weighing 29 lbs., and of compact copper, was thus produced.

THE *Chemical News* describes a new method of heating stoneware vessels, and of obtaining regulated high temperatures, which will be of considerable importance in conducting chemical and pharmaceutical operations for manufacturing purposes. By this new method, which has been patented by Mr. J. A. Coffey, the pharmaceutical engineer, any temperature ranging from 100° to 700° F. can be safely and easily obtained. The principle is to cause heavy paraffin oil to circulate, first through a coil of pipes in a furnace, and then through the jackets of the pans. It moves by its own convection. As contrasted with steam-heat, the inventor claims for his process a saving of 30 per cent. in fuel, the large amount of heat necessary to convert water at 212° F. into steam at 212° being economised.

"THE Autotype Process: being a practical manual of instruction in the art of printing in carbon or other permanent pigment," is a handsomely-printed pamphlet of 48 pp., very clearly written, and describing all the modern improvements in the process, which are considerable. It is divided into five parts, which treat of the nature and history of carbon printing, its general practice, its special practice for non-inverted pictures, its special practice for inverted pictures, and concluding observations

ETHNOLOGY

The Meenas of Central India

LIEUT-COL. C. L. SHOWERS has communicated to the Proceedings of the Asiatic Society of Bengal, a paper upon the Meenas, a wild tribe of Central India. Lieut.-Col. Showers says, that when the Meenas first fell under his observation in the year 1854, they were in a condition of entire lawlessness. Emboldened by long impunity they carried their audacity so far as to attack and pillage several walled towns in the British district of Ajmur, carrying off not only the entire plunder to their hill fastnesses, but numbers of the inhabitants also, holding them to ransom. At that period it fell to the duty of Lieut.-Col. Showers to take them in hand. He proceeded to Jehazpoor, the centre of the disturbed district, and inaugurated certain measures for the tranquillisation and reclamation of the race. From time immemorial, Jehazpoor, in the State of Adeypoor, had been a notoriously disturbed district. A period of brief tranquillity was accorded to Jehazpoor during the early part of the present century by the appalling severity of the measures of the noted minister Lalim Sing, after Jehazpoor fell into the possession of Kotah in 1806. On the restitution of the district, however, to Meywar, in 1819, it soon relapsed into its former disturbed condition. Jehazpoor was, in truth, a position well chosen for the lawless occupation of professional marauders, being a strong, hilly, and jungly country, where the boundaries of four jurisdictions meet, viz.—Meywar, Boondee, Jeypoor, and Ajmur. There are twelve tribes of Meenas in Central India, but the one under notice is called the Purihars, who were the dominant race in Marwur, till dispossessed of their ancient capital Mundore by the Rhatees towards the close of the fourteenth century. In a generation or two afterwards they are found in the Chronicles lurking on the quadruple boundary already alluded to, a race of outcasts without a common head; and such they have continued ever since, "their hand against every man, and every man's hand against them," plundering in gangs and joining any of the great marauding movements that have from time to time been organised under noted leaders. Thus in 1847, some of the boldest of the outlawed Thakur Javahir Singh's followers were these Meenas. The same indomitable spirit which carried the Purihars forth out of the land of their lost dominion seems to have maintained them in a state of wild independence throughout the long interval since; for though nominally owing allegiance to the States upon the verge of whose territories it has suited their purpose to locate themselves in *fallahs* or gangs, they have never really succumbed to any power, but, hanging together as one man, have always united to repel the frequent futile attempts that have been made from time to time by the rulers of States to coerce any of their Meena subjects, so-called. The aggregate of male adults in the tribe is about 24,000; of this number about 10,000, distributed in 200 villages, are located along these border tracts. Individually the men are brave to desperation, athletic and hardy, many of them tall with fine countenances, denoting their superior origin. The Meena will neither eat, smoke, nor intermarry with the aboriginal Buhl, Mair, Kole, or low-caste Meena of the Aravulla; that is to say, he will not give a daughter in marriage, though he will take to his bed as many daughters of inferior tribes as he can support. Their pride of birth is indeed excessive, fostered by traditions ascending beyond the bounds of history to the regions of myth. The genealogist of the tribe is the honoured guest in every village he visits in his annual round. Each family engages his company for one entire day, which is occupied in recording in the ponderous MS. volume the recent additions to the family tree, whether in the male or female branch; for even the ancestry of the women is duly recorded. About half the tribe are armed with matchlocks of a superior manufacture, about half with the bow, and all with the kattar, or double-hilted dagger, which is a weapon they peculiarly affect. It is a weapon never detached from the person a moment, waking or sleeping. Free from the ordinary prejudices of caste, the Purihars are great eaters of meat, which their cattle-lifting raids furnish in profusion. They are also great drinkers of spirits, which serve to increase their natural ferocity. All are married, and many besides take in keeping the widows of their deceased clansmen to the number of two or three each, or otherwise forcibly domicile women abducted in their raids. Perhaps the most noteworthy fact relating to the tribe was their ignorance, up to the day of Lieut-Col. Showers' arrival among them, of the true character of the British Government as the paramount power.